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(54) Title: **HEAP LEACH BIO OXIDIZATION**

(57) Abstract: A method for biologically heap leaching ore within a greenhouse.

PATENT APPLICATION

HEAP LEACH BIO OXIDIZATION

Treatment of refractory base and precious metal ore requires expensive crushing, milling, and flotation followed by pyrometalurgical reduction.

BRIEF DESCRIPTION OF THE DRAWING

The drawing, no scale, shows a transverse cross section of a loaded biological oxidation heap leach pad.

The launder, rehandling equipment, precipitate column(s), pulp collection and pumping equipment and second leach pad for receiving the laundered, unoxidized ore are not shown.

Alternatively, the launder could consist of a Variable Capacity Improved Rand Leases Plane Table having a very small grooves, for example minus 40 mesh.

The table could then discharge extracted concentrate directly into the precipitate columns.

Applicant's patent application 08/864,698, Variable Capacity Improved Rand Leases Plane Table is hereby incorporated into this application by reference.

DETAILED DESCRIPTION OF THE DRAWING

#1 is the clear plastic, 10 mil plus, green house membrane providing for entrance of sunlight, retention of humidity, elevation of temperature and control of liquid process volumes in the necessary out door environment.

#2 is one branch of the perforated, small diameter, high pressure plastic irrigation pipe line from the intermittently timed pump, #7.

The support systems for #1&2 may be integral from the ore stockpile, #3, heaped surface.

#4 is the self draining asphaltic concrete leach pad which is built with an apposite transverse and longitudinal grade so that all leach solution eventually drains to the pump's sump, #6.

5 Asphaltic concrete is used for the leach pad as this material is relatively unaffected by an acidic solution and can withstand movement of heavy equipment thereby enabling a final clean-up of oxidized ore with a rubber tired front end loader.

10 #5 is an air vent at the skirt of the clear plastic green house membrane for entrance of oxygen.

CLAIMS

I Claim:

- I.) A method for biologically heap leaching ore within a green house.
- II.) The green house of claim 1 which comprises a clear plastic membrane over the top of said heap.
- III.) The method of claim 1 which comprises recirculating irrigation.
- IV.) The method of claim 1 which further comprises an asphaltic concrete heap leach pad.
- V.) Laundering bio oxidized heap leach ore.
- VI.) Column precipitation of bio oxidized heap leach pulp.
- VII.) A method for production of trivalent arsenic which comprises bio oxidizing refractory ore within a green house.
- VIII.) The method of claim 7 which further comprises column precipitation.
- IX.) Laundering oxidized ore over a minus 40 mesh variable capacity improved and leases plane table for extraction of a pulp heavy mineral concentrate.

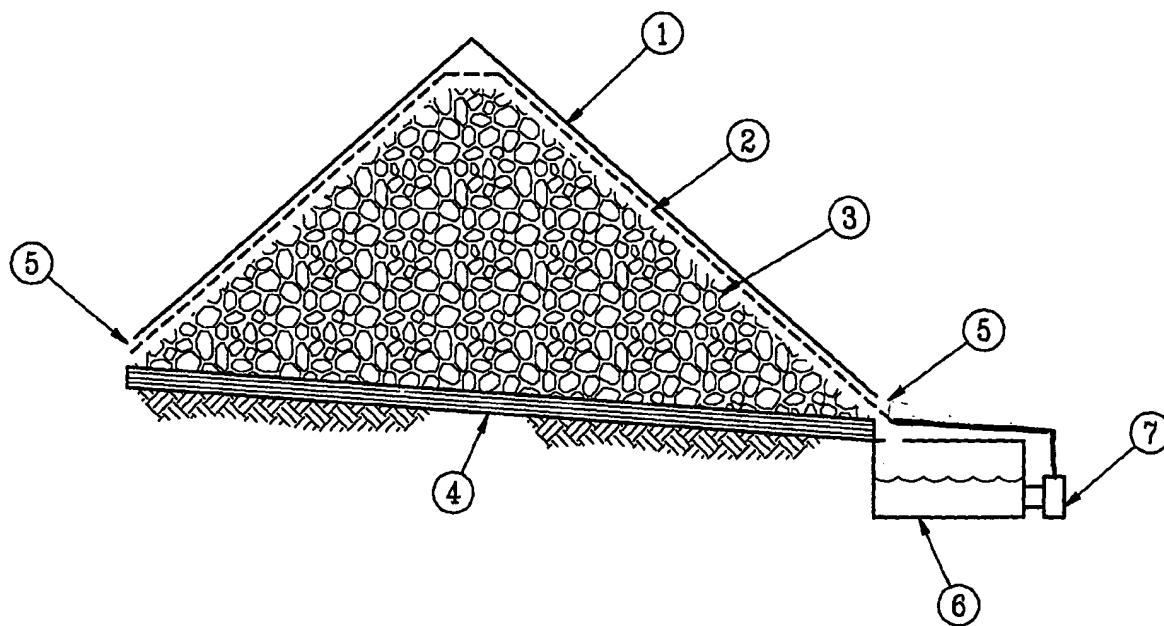
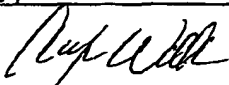


FIGURE A

INTERNATIONAL SEARCH REPORT

 International application No.
PCT/IB00/00928

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : C22B 3/18, 30/04 US CL : 75/743; 423/658.5, 87 According to International Patent Classification (IPC) or to both national classification and IPC														
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 75/743; 423/658.5, 87 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WEST search terms: greenhouse, leach, metal, arsenic														
C. DOCUMENTS CONSIDERED TO BE RELEVANT														
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.												
X,E -- Y,E	US 6,159,270 A (RASKIN et al) 12 December 2000, column 14, lines 38-40.	1 -- 2, 3												
X	US 4,992,179 A (BRIERLEY et al) 12 February 1991, column 4, lines 64 and 65.	5, 6												
Y	US 5,917,117 A (ENSLEY et al) 29 June 1999, column 6, line 41 and column 7, lines 29-32.	7												
A	US 5,928,406 A (SALT et al) 27 July 1999, column 4, line 29, see Claims	7												
A	US 5,785,735 A (RASKIN et al) 28 July 1998, see Claims	1-9												
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.														
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* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention													
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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Z" document member of the same patent family													
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